TWIN TRANSFORMATION PROJECT

Project No: 2024-1-TR01-KA220-VET-000255722

INCREASING THE GREEN AND DIGITAL COMPETENCIES OF SME OWNERS AND EMPLOYEES IN THE SHOE MANUFACTURING AND LEATHER SECTOR

TWIN TRANSFORMATION CURRENT SITUATION NATIONAL REPORT OF PORTUGAL

OCTOBER, 2025

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PREFACE

This report was prepared to assess the impact of green and digital transformation on SMEs and tradespeople. These national reports will serve as the cornerstone of the joint report. Initially, a desk study was conducted during the preparation of the report. Following this, interviews were conducted with relevant public and private institutions and organizations. The information gathered was presented in a specific format in the report.

1. NATIONAL LEGISLATION REGARDING GREEN AND DIGITAL TRANSFORMATION

1.1. Signed International Agreements/Protocols and Their Implementation

Portugal is a signatory to several international agreements and protocols related to green and digital transformation, including:

Agreement/Protocol	**Portugal's Commitment**	**Implementation Mechanism**
EU Green Deal (2020)	Climate neutrality by 2050, Circular Economy Action Plan	Integrated via PNEC 2030, Climate Framework Law
Paris Agreement (2015)	55% GHG reduction by 2030 (EU target)	Enforced by national energy/climate policies
Fit for 55 Package (EU)	Supports emissions trading, renewable energy expansion	Transposed via national energy legislation
Digital Decade Policy Program (EU, 2021)	Targets 75% of EU businesses using cloud/AI/big data	Implemented via Digital Transition Action Plan
UN 2030 Agenda for Sustainable Development	SDGs 9 (Innovation), 12 (Responsible consumption), 13 (Climate)	Embedded in public funding priorities
EU Circular Economy Action Plan	Waste prevention, repairability, reuse	Reflected in Portugal's circular economy laws

The government has implemented measures to meet the targets set out in these agreements, such as reducing greenhouse gas emissions and promoting renewable energy sources.

The key Institutional Actors Responsible for the Implementation of these measures are:

- Ministry of Environment and Energy– Oversees climate and green policy enforcement
- Ministry of Economy and Territorial Cohesion– Coordinates digital policy and SME innovation support
- IAPMEI – Manages SME-related incentives and transformation tools
- Agência Portuguesa do Ambiente (APA) – Environmental compliance and emissions tracking
- Portugal Digital Mission Structure – Leads digital skills and public-private coordination

Summarizing, the practical implications for SMEs & Craftsmen are:

Area	Regulation or Treaty	SME/Craftsmen Impact
Emissions & Energy	Climate Law, PNEC 2030, EU Green Deal	Grants for energy efficiency, solar, electrification
Circular Economy	Waste Framework Law, EPR	Pressure to reduce waste, eco-design requirements
Digital Adoption	Digital Action Plan, EU Digital Decade	Support for ERP, e-commerce, AI tools
Compliance & Funding	Paris Agreement, EU packages	Access to climate/digital funding, reporting duties

1.2. National Legal Regulations (Laws, Regulations, and Guidelines)

Portugal has enacted several laws and regulations aimed at promoting green and digital transformation in the country. Some key legislation includes:

- National Energy Strategy 2050: This strategy sets out the objectives and measures to be taken to transition to a more sustainable energy system, including increasing the share of renewable energy sources and improving energy efficiency.
- National Climate Change Program: This program outlines the country's efforts to mitigate and adapt to climate change, including reducing greenhouse gas emissions and promoting sustainable development.
- Digital Transition Strategy: This strategy aims to promote the digital transformation of the economy and society, including measures to boost digital skills, innovation, and investment in digital infrastructure.
- Circular Economy Action Plan: Portugal has adopted a circular economy action plan to promote resource efficiency, reduce waste, and encourage recycling and reuse.
- Green Public Procurement: The government has introduced regulations to promote green public procurement, ensuring that public organizations prioritize environmentally friendly products and services. Overall, Portugal has made significant efforts to promote green and digital transformation through its legal framework, aligning with international agreements and implementing national regulations to drive sustainable development and innovation.

Next we present a structured summary of Portugal's national legal regulations—including laws, regulations, and guidelines—on the green and digital transformation, particularly relevant for SMEs, craftsmen, and traditional industries like footwear, furniture, and textiles.

I. Green Transformation – Laws and Regulations

1. Climate Framework Law (Lei de Bases do Clima)

- Law No. 98/2021, December 31, 2021
- Sets the legal foundation for Portugal's climate policy and carbon neutrality goals.
- Key measures:

- Mandatory climate risk reporting for companies and public bodies
- Targets: 55% emissions reduction by 2030, net-zero by 2050
- Promotion of green public procurement

2. National Energy and Climate Plan (PNEC 2030)

- Legal policy framework aligned with EU climate and energy goals.
- Outlines strategies in renewables, energy efficiency, low-carbon mobility, and industry decarbonization.
- Guides national and regional investment and SME support.

3. Decree-Law No. 102-D/2020 – Waste Management and Circular Economy

- Transposes EU Directives on waste and circular economy
- Key provisions:
  - Extended Producer Responsibility (EPR)
  - Waste reduction and separation obligations for industries
  - Incentives for reuse, repair, and eco-design

4. Decree-Law No. 15/2022 – Renewable Energy Production

- Facilitates the licensing of self-consumption systems (e.g. solar panels)
- Enables SMEs and small producers to access the energy transition
- Supports collective energy communities and grid integration

II. Digital Transformation – Laws and Strategies

1. Digital Transition Action Plan (Plano de Ação para a Transição Digital)

- Approved in 2020
- Strategic national framework with legal force through ministerial implementation acts
- Three pillars:
  - People: Digital literacy (INCoDe.2030 program)
  - Businesses: Support for SMEs adopting ERP, AI, e-commerce
  - Government: Digitization of public services

2. National Strategy for Artificial Intelligence – AI Portugal 2030

- Aligned with the EU Artificial Intelligence Act
- Promotes:
  - AI integration in SMEs and manufacturing
  - Ethical guidelines for AI development
  - Innovation clusters and testing environments

3. Cybersecurity Law – Law No. 46/2018

- Transposes the EU NIS Directive
- Applies to critical infrastructures and digital service providers

- SMEs in sectors like manufacturing and logistics must ensure cyber resilience if they handle sensitive data

4. General Data Protection Regulation (GDPR) – Enforced Nationally

- GDPR is directly applicable across the EU
- In Portugal, supervised by the National Data Protection Commission (CNPD)
- Affects all SMEs and digital platforms handling customer data

Summary of Benefits for SMEs & Craftsmen

- Funding access through PRR, Portugal 2030, and EU structural funds
- Legal clarity on digital operations, sustainability obligations, and reporting
- Support services for green tech adoption, cybersecurity, AI integration, and data protection
- Opportunities in circular economy (eco-design, reuse) and energy transition (renewables)

2. NATIONAL LEVEL APPLICATIONS/RESPONSIBLE INSTITUTIONS AND ORGANIZATIONS/ROLES REGARDING GREEN AND DIGITAL TRANSFORMATION

2.1. Public Authorities Responsible for Green and Digital Transformation/Their Duties and Responsibilities

The public authorities have specific duties and responsibilities related to green and digital transformation, including developing policies, implementing regulations, monitoring progress, and coordinating initiatives across different sectors and also ensuring the security and efficiency of digital systems, promoting digital literacy, and driving innovation in the digital sector. They work together to drive sustainable development, innovation, and economic growth in Portugal and to create a conducive environment for digital growth and development in Portugal.

The main portuguese public authorities responsible for green and digital transformation, including their main duties and responsibilities in relation to SMEs, artisans, and the broader economy, are listed below:

1. Ministry of Economy and Territorial Cohesion (Ministério da Economia e da Coesão Territorial)

- **Duties & Responsibilities**:
    - Designs economic strategies including support for SMEs and innovation.
    - Promotes digital transformation in commerce, industry, and services.
    - Oversees funding programs for modernization, including green tech and digital tools.
    - Manages regional development strategies and EU cohesion funds.

2. Ministry of Environment and Energy (Ministério do Ambiente e Energia)

- **Duties & Responsibilities**:

- Leads national environmental and climate policies.
- Coordinates Portugal's efforts on the European Green Deal and Fit for 55 Package.
- Supports eco-innovation, circular economy, decarbonization, and sustainable energy transitions.
- Collaborates with SMEs for cleaner production and energy efficiency.

3. AMA – Agency for Administrative Modernization (Agência para a Modernização Administrativa)

- **Duties & Responsibilities**:
  - Drives digital public services (e-government), which SMEs and citizens use.
  - Supports digital skills programs and simplifies administrative procedures via digital platforms.
  - Collaborates with municipalities and SMEs to foster digital ecosystems.

4. APA – Portuguese Environment Agency (Agência Portuguesa do Ambiente)

- **Duties & Responsibilities**:
  - Responsible for enforcing environmental regulations, monitoring air and water quality, and managing natural resources.
  - Key role in implementing policies related to green transformation.

5. ANI – National Innovation Agency (Agência Nacional de Inovação)

- **Duties & Responsibilities**:
  - Supports R&D and tech transfer for green and digital innovation.
  - Provides co-funding and technical assistance for innovation projects involving SMEs and startups.
  - Manages the "Interface" system connecting businesses with research and innovation hubs.

6. IAPMEI – Agency for Competitiveness and Innovation (Agência para a Competitividade e Inovação)

- **Duties & Responsibilities**:
  - Central support body for SMEs in innovation, competitiveness, and sustainability.
  - Provides access to finance, capacity-building programs, and consulting.
  - Leads national initiatives in eco-efficiency and digital transition for small businesses.

7. DGAE – Directorate-General for Economic Activities (Direção-Geral das Atividades Económicas)

- **Duties & Responsibilities**:
  - Develops sectoral economic policies aligned with sustainability and digitalization.
  - Coordinates simplification of licensing and compliance for businesses.

- Encourages adoption of green technologies and digital tools across sectors.

8. AICEP – Trade & Investment Agency (Agência para o Investimento e Comércio Externo de Portugal)

- **Duties & Responsibilities**:
  - Attracts foreign investment in green and digital industries.
  - Helps Portuguese SMEs expand internationally, including through digital platforms.
  - Promotes sustainable and innovative Portuguese products and services abroad.

9. Portugal Digital Mission Structure (Estrutura de Missão Portugal Digital)

- **Duties & Responsibilities**:
  - Implements the National Digital Transition Plan.
  - Leads strategies on digital skills, business digitalization, and public service innovation.
  - Coordinates national efforts to close the digital divide in SMEs.

10. INCoDe.2030 – National Digital Skills Initiative (Iniciativa Nacional para as Competências Digitais)

- **Duties & Responsibilities**:
  - National initiative (multi-ministerial) on digital skills
  - Promotes digital literacy across education, employment, and citizenship.
  - Supports inclusion of vulnerable groups in digital transition.
  - Works with public and private stakeholders to bridge the digital divide.

12. National Cybersecurity Centre (Centro Nacional de Cibersegurança)

- **Duties & Responsibilities**:
  - Responsible for promoting cybersecurity measures and protecting critical infrastructure from cyber threats.
  - Work to prevent and respond to cyber attacks.
  - Educate the public on cybersecurity best practices.
  - Enforce regulations to ensure the security of digital systems.

Key Cross-Cutting Responsibilities

Area	**Responsibility**
Strategic Planning	Develop national plans for green/digital transformation (e.g. Portugal 2030, PRR).
Funding Management	Distribute and oversee EU and national funds (e.g. PRR, REPowerEU, Horizon Europe).
Support for SMEs	Provide technical assistance, training, and incentives.

Area	Responsibility
Monitoring & Evaluation	Track impact of green and digital measures and revise policies accordingly.
International Cooperation	Align with EU regulations and sustainability goals.

2.2. Professional Organizations and NGOs Representing Craftsmen and SMEs, Their Duties and Responsibilities Regarding Green and Digital Transformation

Key Areas of Focus:

- **Training and Education:** Offering programs that educate craftsmen and SMEs about green and digital practices.
- **Funding and Resources:** Facilitating access to financing for sustainable innovations and digital tools.
- **Advocacy and Policy Development:** Engaging with the government to create a favorable ecosystem for sustainable and digital businesses.
- **Networking and Collaboration:** Creating platforms for sharing best practices among craftsmen and SMEs.

Some of the **Portuguese professional organizations and NGOs representing craftsmen and SMEs**, with a focus on their **duties and responsibilities regarding green and digital transformation** are listed below

These organizations play a crucial role in guiding and supporting craftsmen and SMEs as they navigate the dual challenges of adopting sustainable practices and embracing digital technologies.

1. CCP – Confederation of Commerce and Services of Portugal (Confederação do Comércio e Serviços de Portugal)

- **Represents**: SMEs in commerce and services, including artisans.
- **Duties/Responsibilities**:
    - Advocates for digital innovation and environmental sustainability in retail and service sectors.
    - Partners with the government and EU for green transition programs (e.g. energy efficiency, circular economy).
    - Provides training and support on digital tools (e-commerce, ERP systems, etc.).

2. AIP – Portuguese Industrial Association (Associação Industrial Portuguesa)

- **Represents**: SMEs and industrial artisans.
- **Duties/Responsibilities**:
    - Supports digital transformation through industry 4.0 initiatives.
    - Promotes environmental innovation (clean production, eco-design).

- Runs business incubators and innovation hubs for SME capacity-building.

3. CIP – Business Confederation of Portugal (Confederação Empresarial de Portugal)

- **Represents**: Employers and SMEs across all sectors.
- **Duties/Responsibilities**:
  - Policy advocacy at national and EU levels for digital and green strategies.
  - Leads awareness campaigns and capacity-building programs.
  - Organizes training and access to funding (PRR – Recovery and Resilience Plan).

4. CEARTE – Professional Training Centre for Crafts and Heritage (Centro de Formação Profissional para o Artesanato e Património)

- **Represents**: Craftsmen and artisans.
- **Duties/Responsibilities**:
  - Provides vocational training in crafts with digital integration (e.g., digital design tools).
  - Develops eco-design and sustainable material use programs.
  - Helps traditional artisans transition to e-commerce and digital marketing.

5. ANI – National Innovation Agency (Agência Nacional de Inovação)

- **Represents**: Innovation stakeholders, including SMEs.
- **Duties/Responsibilities**:
  - Supports R&D and innovation projects, especially those addressing sustainability.
  - Facilitates digital transformation via grants and partnerships.
  - Works with SMEs to promote green technologies and digital adoption.

6. ZERO – Associação Sistema Terrestre Sustentável

- **Environmental NGO** working with SMEs on sustainability issues.
- **Duties/Responsibilities**:
  - Advocates for circular economy models.
  - Cooperates with SMEs for decarbonization and sustainable innovation.
  - Raises awareness on EU Green Deal obligations for small businesses.

Common Duties Regarding Green and Digital Transition

Area	Responsibility
Policy Advocacy	Represent SMEs in the formulation of national digital/green strategies.

Area	Responsibility
Funding Access	Help SMEs access EU & national funds (e.g. PRR, Portugal 2030).
Training & Education	Provide upskilling in digital tools, eco-design, and sustainable practices.
Technology Integration	Promote adoption of Industry 4.0, AI, e-commerce, CRM/ERP, etc.
Environmental Compliance	Assist in adhering to environmental laws, reducing carbon footprint.
Networking & Support	Create platforms for knowledge exchange and partnerships.

3. ECONOMIC AND SOCIAL IMPACTS OF GREEN AND DIGITAL TRANSFORMATION ON CRAFTSMEN AND SMES—CHALLENGES ENCOUNTERED AND WORKS TO BE DONE FOR SOLUTIONS

3.1. Economic and Social Impacts of Twin Transformation

- Financial Challenges and Investment Requirement

The twin transformation refers to the simultaneous digitalization and greening of the economy. For craftsmen and SMEs, this means adopting:

- **Digital technologies** (e.g. e-commerce, ERP, automation, AI)
- **Sustainable practices** (e.g. eco-design, circular economy, carbon reduction)

These changings have economic and social impacts, that can be positive or negative like shown below:

Economic Impacts

✓ Positive Outcomes

Impact	Description
New market opportunities	Access to green and digital markets (e.g. organic products, online craft marketplaces).
Productivity gains	Automation, digital tools, and data improve efficiency.
Innovation and diversification	Encourages development of eco-friendly and tech-enhanced products/services.
Export and internationalization	Easier global reach through digital channels (especially for niche or artisan products).

⚠ Negative Pressures

Impact	Description
Cost of compliance	Need to meet environmental and digital regulations (e.g. ESG reporting, GDPR).
Competitive disadvantage	Traditional artisans risk being left behind without digital or sustainable capabilities.
Risk of obsolescence	Older tools, materials, or business models may become non-viable.

 Social Impacts

Impact	Description
Reskilling needs	Workers and owners must learn new digital and sustainability skills.
Job transformation	Shift from manual roles to tech-enabled functions (e.g. CNC, digital marketing).
Urban-rural divide	Rural artisans may face more difficulty accessing digital infrastructure or green tech.
Preservation of craft heritage	Digital tools can help preserve and promote traditional craftsmanship globally.

Focusing on Financial Challenges and Investment Requirements we can find:

- **Common Challenges for Craftsmen and SMEs**

Challenge	Details
High upfront costs	Equipment upgrades, digital systems, eco-certification, etc.
Limited internal capital	Small-scale operations often lack retained earnings or cash flow.
Access to finance	Difficulty accessing bank loans or understanding EU/national grant systems.
Uncertain ROI	Investments in sustainability or digital tools may take time to pay off.
Fragmented support ecosystem	Lack of guidance navigating government and EU support mechanisms.

- **Typical Investment Needs**

Category	Examples
Digitalization	CRM systems, e-commerce platforms, cloud tools, automation, cybersecurity.
Sustainability	Energy-efficient equipment, renewable energy systems, sustainable materials.
Skills Development	Staff training in digital tools, eco-design, green compliance.

Category	Examples
Certification & Compliance	Eco-labels, GDPR systems, ISO 14001, etc.

- **Recommended Support Mechanisms**

Type of Support	Examples
Grants and subsidies	Portugal 2030, PRR (Recovery and Resilience Plan), EU Green Deal funds.
Soft loans & microcredit	EIB and national SME banking instruments.
Public procurement incentives	Favoring sustainable and digital-savvy SMEs in tenders.
Advisory & technical help	IAPMEI, Portugal Digital providing guidance and diagnostics.
Innovation vouchers	Funding for consulting, prototyping, digital audits.

✓ Conclusion

Craftsmen and SMEs are vital to Portugal's economy and cultural identity, but the twin transition brings significant investment pressures. Without targeted financial support, skills development, and digital infrastructure, these businesses risk being left behind. Conversely, with the right assistance, they can thrive in new, sustainable, and global markets.

3.2. Challenges Faced by SMEs and the Footwear Sector

- Barriers to Technology Adoption and Green Practices

Here's an analysis of the **challenges faced by SMEs**, with a specific focus on the **footwear sector**, highlighting the **barriers to technology adoption and green practices**:

1. Structural and Financial Barriers

Barrier	Description
Limited financial capacity	Small margins and low cash reserves limit ability to invest in new tech or sustainability upgrades.
High upfront costs	Green materials, waste treatment systems, automation, or digitalization require substantial investment.
Difficulty accessing funding	SMEs often lack experience applying for EU/national grants, or collateral for loans.

2. Technological Barriers

Barrier	Description
Lack of internal IT/tech expertise	Many SMEs don't have dedicated staff for digital or green innovation.

Barrier	Description
Low digital maturity	Manual or semi-digital processes prevail (e.g. production scheduling, design, inventory).
Fragmented systems	Incompatibility between legacy systems and modern software/ERP platforms.
Reluctance to adopt Industry 4.0	Hesitancy due to uncertainty about ROI, maintenance complexity, or workforce resistance.

3. Barriers to Green Transition

Barrier	Description
Cost of eco-materials	Sustainable leather or bio-based materials are more expensive and harder to source.
Lack of clear standards	Confusion about which certifications (e.g. ISO 14001, LWG, REACH) to pursue.
Waste management issues	Disposal of leather scraps, glues, dyes can be complex and regulated.
Limited circular economy integration	Reuse, recycling, and repair models underdeveloped due to lack of infrastructure or customer demand.

4. Human Capital and Skills Gaps

Barrier	Description
Lack of digital/green skills	Workers and managers may lack training in 3D design, automation, sustainability reporting.
Aging workforce	Particularly in traditional footwear hubs like Felgueiras or São João da Madeira.
Weak innovation culture	SMEs often prioritize short-term survival over long-term innovation.

5. Market and Regulatory Barriers

Barrier	Description
Consumer price sensitivity	Green products may not be viable if customers aren't willing to pay more.
Complexity of EU regulations	Difficult to navigate REACH, ecodesign rules, ESG reporting, etc.
Limited awareness of benefits	Many SMEs don't see the added value of sustainable or digital transformation.

🏭 Footwear Sector Specific Notes (Portugal)

- Portugal is the **2nd largest footwear exporter in Europe**, known for quality and design.
- The sector is dominated by **SMEs and family-run businesses**, making transition more difficult.
- While some firms lead in **digital design (CAD/CAM)** and **eco-labels**, most are at early stages.
- Sustainability is increasingly demanded by **international buyers** (especially from the EU and North America), putting pressure on supply chains.

✅ Recommendations to Overcome Barriers

Area	Recommendations
Finance	Expand access to PRR funds, Portugal 2030, innovation vouchers, and microloans.
Skills	Partner with IAPMEI, and industry associations for digital/green upskilling.
Tech Support	Offer diagnostic tools and subsidies for ERP, CAD, PLM, and automation tech.
Green Transition	Support eco-certification, sustainable sourcing, and circular business models.
Policy	Simplify regulation compliance processes for SMEs.

3.3. Solutions and Adaptation Strategies for SMEs and Craftsmen

- Technological Integration

Here's a detailed overview of solutions and adaptation strategies for SMEs and craftsmen, with a focus on technological integration to support their green and digital (twin) transition:

1. Digital Readiness Assessment and Planning

- Conduct **digital maturity assessments** (e.g. through IAPMEI or local incubators).
- Identify tech gaps and prioritize tools that add **immediate operational value**.

📌 Tools/Programs:

- "Diagnóstico Digital" by **Portugal Digital**
- EU-funded **Digital Innovation Hubs (DIHs)** offer free or subsidized audits

2. Step-by-Step Technology Adoption

Implement digital tools in manageable phases based on need and capacity:

Stage	Tool Examples
Basic digitization	Digital invoicing, email marketing, inventory spreadsheets
Process automation	ERP systems, barcode scanning, workflow tools

Stage	Tool Examples
Advanced tools	CAD/CAM for crafts, IoT sensors, AI forecasting

3. Sector-Specific Digital Tools for Craftsmen

Craft Sector	Useful Technologies
Footwear & Fashion	CAD design, 3D scanning, virtual try-ons
Woodworking	CNC machines, inventory trackers, eco-coatings
Ceramics & Pottery	3D printing for prototyping, online stores
Jewelry	Laser cutters, CAD for customization

4. Digital Skills Development

Upskill both owners and workers in key areas like:

- Digital marketing
- e-Commerce management
- Software use (e.g. design, finance, CRM)

📌 **Available Resources:**

- Crafts-specific training
- INCoDe.2030: National digital skills initiative
- Online platforms.

5. Platformization and Online Market Integration

Use existing digital platforms to sell, promote, and engage:

Platform Type	Examples
B2C e-commerce	Etsy, Shopify, WooCommerce
B2B marketplaces	Faire, Ankorstore, EU artisan networks
Social media commerce	Instagram Shops, Facebook Marketplace

6. Peer Networking and Mentorship

Join local or national digitalization clusters or cooperatives:

- Share experiences, tools, and success stories
- Access group training, bulk tool subscriptions, or common platforms

📌 **Examples:**

- **Crafts incubators**
- **APICCAPS digital support** for footwear SMEs

7. Financial Support for Tech Adoption

- Tap into public and EU funding programs that subsidize or co-finance tech adoption:

- PRR (Recovery and Resilience Plan)
- Portugal 2030 – Digital Transition Axis
- IAPMEI innovation vouchers
- Local chambers of commerce digitalization grants

📌 **Summary Table: Technological Integration Strategies**

Area	**Strategy/Tool**	**Support Source**
Digital assessment	Maturity diagnostics, roadmaps	IAPMEI, DIHs, local incubators
Gradual tech adoption	From ERP to AI, by need	Sector-specific consultants
Skills development	Digital literacy and vocational upskilling	INCoDe.2030
Online sales integration	Use of B2C/B2B platforms	APICCAPS, AICEP, incubators
Funding	Innovation vouchers, PRR grants	EU & national programs

3.4. Support and Incentive Mechanisms to Accelerate the Twin Transformation of Craftsmen and SMEs

- Governmental and EU Support Programs
- Private Sector Collaboration and Industry Partnerships

Here's a comprehensive overview of **support and incentive mechanisms** available to **craftsmen and SMEs** in Portugal to accelerate their **twin transformation**—green and digital—including both **governmental/EU programs** and **private sector collaborations**:

1. Governmental and EU Support Programs

◆ **A. Portugal 2030**

- **Purpose:** Long-term strategy aligned with EU cohesion policy
- **Focus Areas:** Digital transition, green economy, innovation, internationalization
- **Instruments:**
  - Grants for SME innovation and tech adoption
  - Support for eco-efficiency and sustainable processes
- **Administered by:** COMPETE, IAPMEI, CCDRs (regional)

◆ **B. PRR – Recovery and Resilience Plan (Plano de Recuperação e Resiliência)**

- **Budget:** ~€16.6 billion (2021–2026)
- **Relevance to SMEs/Craftsmen:**
  - **"Empresas 4.0"** – funding for digital transformation
  - **Energy efficiency** in production processes

- Digital training programs and innovation vouchers

◆ **C. IAPMEI Programs**

- **IAPMEI (Agência para a Competitividade e Inovação)** supports SMEs with:
  - Digitalization diagnostics and training
  - Innovation & sustainability funding
  - StartUP Voucher and Portugal Incubators Network
  - "Vale Indústria 4.0" – innovation vouchers for tech consulting and pilot projects

◆ **D. Environmental Fund / Fundo Ambiental**

- Support for:
  - Energy-efficient machinery
  - Renewable energy installations (e.g. solar panels)
  - Circular economy pilot projects

◆ **E. Portugal Digital / INCoDe.2030**

- Digital inclusion and upskilling programs
- Free or subsidized training for digital skills
- SME-focused workshops on cybersecurity, e-commerce, and software tools

◆ **F. EU-Wide Instruments**

Program	**Scope**
Horizon Europe	Innovation & R&D for sustainable tech
COSME/Single Market	SME access to finance and internationalization
Digital Europe	Supports SME digital skills and infrastructure
EIB Financing	Loans and guarantees through local banks

2. Private Sector Collaboration & Industry Partnerships

◆ **A. Industry Associations**

Association	**Role in Twin Transition**
APICCAPS (Footwear)	Innovation roadmaps, trend platforms, export support, digital marketing tools
AIMMP (Wood & Furniture)	Promotes eco-certification and modern production technologies

◆ **B. Digital Innovation Hubs (DIHs) & Clusters**

- Help SMEs test digital/green technologies before investing

- Offer advisory, prototyping, and matchmaking with solution providers
- Example: **DIGI4FASHION** (Footwear, leathergoods, textile and clothing sectors)

◆ **C. Business Incubators and Accelerators**

- Support startups and artisans with:
  - Mentoring in digital sales and sustainability
  - Co-working, e-commerce setup, branding assistance
- Examples: **Startup Portugal**, **Creative Hub Lisbon**, **Design Factory Aveiro**

◆ **D. Private Sector Partnerships**

Type	**Examples**
Technology providers	Partnerships with Microsoft, Google, or SAP for SME platforms
Retail and e-commerce	Shopify, Etsy, and B2B platforms help digitize artisan sales
Green suppliers	Joint sourcing of sustainable materials or eco-certification pathways
Corporate social responsibility (CSR)	Large companies offering SME support as part of ESG strategy

◆ **E. Public Procurement as a Lever**

- Government tenders increasingly favor **sustainable and digitally capable SMEs**
- Opportunity for artisans/SMEs to modernize through contracts

✅ **Summary Table: Key Support Streams**

Support Type	**Mechanism/Program**	**Administered by**
Funding	PRR, Portugal 2030, Environmental Fund	IAPMEI, CCDRs, Fundo Ambiental
Technology Access	DIHs, Vale Indústria 4.0, Horizon Europe	DIGI4FASHION, EU
Skills Training	INCoDe.2030, Portugal Digital	CEARTE, IAPMEI, public-private hubs
Market & Sales	APICCAPS platforms, Etsy/EU B2B channels	Industry associations, AICEP
Partnerships	CSR, clusters, incubators	Startup Portugal, local networks

4. IMPACTS OF TWIN TRANSFORMATION ON THE LABOR MARKET (EMPLOYMENT/PROFESSIONAL EDUCATION/NEW SKILLS/NEW PROFESSIONS)

4.1. Changes in Labor Demand and Emerging Professions

- Impact of Automation and Technology-Driven Job Transformations

The twin transformation is profoundly reshaping the footwear and leather industry. Technology innovations such as automation, AI, 3D printing, robotics, and sustainable manufacturing techniques are disrupting traditional workflows and labour structures.

This represents a challenge and an opportunity for the footwear and leather industry, creating new, higher-value jobs. Preparing the workforce through new education programs, skills upgrading, and strategic policy support is key to a successful and inclusive transition.

Technology-Driven Innovations

Automation and Robotics

- Manufacturing processes robotisation.
- AI for defect detection and predictive maintenance.

In Portugal, a major player in the European footwear and leather industry, the sector has experienced significant technological advancement through the adoption of automation, robotics, and Artificial Intelligence (AI). Portuguese manufacturers are increasingly integrating robotic systems into key production processes, such as automated cutting and lasting, enhancing precision, speed, and reducing material waste.

AI plays a crucial role in quality control and maintenance. Smart systems using machine vision detect material defects more accurately than human inspectors, improving product quality and customer satisfaction. Predictive maintenance powered by AI helps avoid machinery breakdowns and ensures smoother production workflows.

These innovations are also reshaping workforce needs in Portugal. Companies now require employees with hybrid skills, combining traditional craftsmanship with digital and automation literacy. This technological shift supports Portugal's position in the global market by fostering smarter, more sustainable, and competitive manufacturing practices.

3D Printing and Smart Technologies

- 3D printing
- 3D scanning for custom fit shoes.
- Use of wearable sensors and smart soles for feedback and comfort optimization.

In Portuguese footwear and leather industry, the integration of 3D printing and smart technologies is driving a major shift toward personalized, high-value products. Portuguese manufacturers are adopting 3D scanning to create custom-fit shoes based on precise foot measurements, enabling tailored comfort and performance at a scale previously unachievable in mass production. Components such as insoles and midsoles can now be 3D printed to match individual biomechanics, offering better support and reducing injury risk.

Smart technologies are also gaining ground in Portugal’s footwear innovation ecosystem. Wearable sensors and smart soles embedded in shoes collect real-time data on movement, posture, and gait. This data enhances athletic performance and supports medical applications, such as rehabilitation and gait monitoring, aligning with global trends in health tech.

These innovations are enabling Portuguese producers to offer more customized, intelligent products and explore new business models like on-demand manufacturing and subscription-based health services. As Portugal continues to position itself as a leader in high-tech, design-driven footwear, the adoption of these technologies reflects the industry's commitment to personalization, digital integration, and user-centred innovation.

Sustainable Tech

- Bio-based leather reduces ecological footprint.
- Waterless dyeing and energy-efficient tanning technologies.

In Portugal, sustainable technologies are becoming central to the industry's transformation in response to environmental regulations and changing consumer demands. Portuguese manufacturers are increasingly investing in bio-based leather alternatives derived from renewable sources such as mycelium, pineapple leaves, and apple waste. These materials offer significant environmental benefits by reducing emissions, water usage, and the reliance on animal-based inputs.

Sustainability is also being integrated into production processes. Portuguese tanneries are adopting waterless dyeing technologies and shifting toward energy-efficient, metal-free tanning methods, including vegetable and enzymatic options. These innovations reduce environmental impact, improve workplace safety, and lower operational costs.

As global demand for transparency and eco-responsibility grows, Portugal's footwear sector is aligning itself with circular economy principles and strengthening its international reputation for quality and sustainability. By embracing green innovation, the Portuguese industry is not only enhancing its competitiveness but also contributing to a more ethical and environmentally responsible fashion future.

Decline in Low-skilled Manual Jobs

The ongoing decline of low-skilled manual jobs in the Portuguese footwear and leather industry is being driven by the replacement of traditional tasks—such as cutting, pattern making, and stitching—with advanced technologies like automated machinery, CAD/CAM systems, and robotics. This shift marks a profound transformation in the sector's skill requirements. What was once the domain of hands-on craftsmanship is now increasingly handled by machines capable of performing these tasks with greater speed, precision, and efficiency.

As manual operations are digitized, the workforce is expected to master new competencies. The value of traditional skills is not necessarily lost, but redefined. Workers must now be able to operate digital cutting machines, navigate CAD software, and oversee robot-assisted assembly lines. This evolution demands a hybrid skill set that combines technical literacy with a creative understanding of design and production processes. While some artisans are transitioning into tech-enhanced roles, entirely new job profiles are emerging, ones that require digital fluency, problem-solving, and adaptability.

In Portugal, where the footwear and leather industry are both economically significant and culturally rooted, these changes are reshaping the labour landscape specially in the North. Regions known for artisanal excellence are experiencing a shift toward industry 4.0, challenging traditional workforce models. To remain competitive and socially inclusive, the Portuguese sector must support a skills transition that equips current and future workers with digital and technical proficiencies, while preserving the value-added elements of craftsmanship that distinguish Portuguese products on the global stage.

Addressing this shift requires coordinated strategies: investment in modern vocational training, expanded access to upskilling and reskilling programs, and industry-education partnerships to align talent development with emerging demands. For Portugal, the transformation presents both a risk and an opportunity, to either lose vital know-how or to lead in combining heritage with innovation through a future-ready workforce.

- Traditional roles like manual cutting, pattern making, and hand-stitching are being replaced by automated cutting machines, CAD/CAM systems, and robot-assisted assembly lines.

The growing integration of automation, CAD/CAM systems, and robotics is reshaping both production processes and workforce dynamics. Tasks that were once manual, such as cutting, stitching, and assembly, are increasingly performed by digital and robotic technologies, boosting efficiency and product consistency while reducing waste.

This shift is transforming the nature of work in the sector. The value of manual labour is decreasing in routine tasks, which are now handled by machines, while demand is rising for workers skilled in digital design, machine programming, and maintenance. As a result, traditional entry pathways based on manual skills are being replaced or complemented by education in technology and smart manufacturing systems.

For Portugal, this transition presents both risks and opportunities. Regions historically reliant on low-skilled labour are facing growing pressure to upskill their workforce. Older workers and those without digital competencies are at greater risk of job displacement, particularly in areas lacking modern vocational training infrastructure. However, this also offers Portugal a strategic opportunity to lead in merging artisanal quality with advanced technologies.

To stay competitive and socially inclusive, the Portuguese footwear and leather sector must invest in targeted upskilling initiatives, modernize vocational education, and ensure access to training in digital and soft skills. With coordinated public-private efforts, Portugal can preserve its cultural legacy while building a workforce ready for the demands of industry 4.0.

Increase in Demand for Skilled Labour

- Demand is rising for workers who can operate, program, and maintain automated machinery and digital design tools.

In the context of Portuguese footwear and leather industry, the technological transformation driven by automation, robotics, and digitalization is not only reducing the need for low-skilled, repetitive labour but also creating a parallel surge in demand for skilled workers capable of navigating and sustaining this new industrial landscape. As the country strives to maintain its global reputation for high-quality craftsmanship while integrating cutting-edge technologies, Portuguese manufacturers are increasingly seeking professionals who possess a blend of traditional know-how and modern technical expertise.

This shift is particularly evident in the growing need for workers who can operate, program, and maintain sophisticated automated machinery now prevalent in many Portuguese factories. From robotic arms used in the cutting and stitching processes to automated quality control systems and CAD/CAM design platforms, the machinery itself requires a workforce that understands both the mechanical operation and the digital logic behind these tools. The traditional skills of manual cutting, stitching, and finishing are no longer sufficient on their own; instead, they must be complemented by competencies in software-based design, sensor integration, and data analysis. This has given rise to new professional profiles within the industry, such as machine operators with coding knowledge, industrial maintenance technicians

specialized in robotics, and digital product developers fluent in 3D modelling and manufacturing software.

Portugal, with its strong heritage in footwear and leather craftsmanship—particularly in regions like Felgueiras – Guimarães -Vizela and São João da Madeira – Oliveira de Azeméis – Santa Maria da Feira, all in the North Region, has recognized the need to adapt. Many companies have begun partnering with local vocational institutes, such as CTCP and the public VET school, polytechnics, and industry clusters to develop targeted training programs aimed at equipping current and future workers with the necessary skills to thrive in this new environment. These initiatives often blend practical, hands-on learning with exposure to digital tools, ensuring that the country's workforce can sustain its competitiveness while embracing innovation. Institutions such as the Portuguese Footwear Technological Centre (CTCP) are playing a critical role in facilitating this transition by offering specialized training, upskilling opportunities, and collaborative R&D programs that link industry with academia.

The increased demand for skilled labour in Portuguese footwear and leather sector is also influencing the social and economic dynamics of employment. Younger workers are now more attracted to the industry, seeing it as an area of technical and creative opportunity rather than just manual labour. Simultaneously, companies that fail to modernize their talent strategies risk falling behind, not only in terms of productivity but also in their ability to attract and retain qualified personnel in an increasingly competitive labour market.

In essence, the modernization of Portuguese footwear and leather industry is not a story of labour loss, but of labour transformation. As repetitive tasks are taken over by machines, a new generation of skilled workers is becoming the engine of innovation and growth. The challenge now lies in ensuring that this shift is inclusive, future-proof, and deeply rooted in both the technological evolution and the cultural strengths that have long defined Portuguese footwear as a symbol of quality and design excellence on the global stage.

- Skilled operators are needed for 3D printers, laser cutters, and smart stitching equipment.

In Portugal, the shift toward smart manufacturing is transforming workforce demands. Traditional manual roles are giving way to skilled operators who can manage automated systems, interpret production data, and interface with technologies like CAD/CAM, robotics, and IoT devices.

These tech-savy workers are essential for ensuring efficiency, customization, and sustainability, key factors in Portuguese global competitiveness as a premium footwear producer. Their role extends beyond operation to influencing innovation, quality, and agile production.

To meet this need, institutions like CTCP and vocational schools are expanding training in digital manufacturing and lifelong learning. The future of the sector hinges on developing these skilled professionals, who bridge tradition and technology in Portuguese evolving industrial landscape.

- New Professions Emerging from Green and Digital Technologies

Portuguese footwear and leather industry is undergoing a major transformation, driven by green and digital technologies. This shift is creating a new generation of specialized professions that combine technical, environmental, and creative skills.

Green skills are in high demand, with roles such as sustainability officers, circular economy experts, and eco-material developers playing a key role in aligning production with EU environmental standards. Professionals in carbon footprint analysis, life cycle assessment, and

eco-certification are also essential as companies aim for greater transparency and sustainable practices.

Digital skills are equally crucial. New roles include 3D footwear designers, digital product developers, and automation engineers who use advanced design tools and manage smart production systems. Data analysts and digital integration managers help optimize operations by leveraging real-time insights across the supply chain.

These trends are reshaping the workforce in regional hubs like São João da Madeira and Felgueiras, supported by CTCP and innovation-oriented SMEs. Educational institutions are updating training programs to equip workers with the green and digital competencies needed for the future.

In summary, Portugal's footwear and leather sector is evolving toward a high-value, sustainable, and tech-driven model—where new green and digital skills are central to innovation, competitiveness, and responsible growth.

New Role	Description
Footwear CAD Designer	Designs footwear using 2D/3D modelling software.
Smart Factory Technician	Operates and maintains interconnected production systems using IoT and AI.
Sustainability Compliance Manager / Specialist	Ensures environmental regulations and circular economy principles are followed.
Additive Manufacturing Specialist	Develops and oversees 3D printing for rapid prototyping and production.
Digital Product Manager	Manages digital lifecycle of footwear products, from design to e-commerce.

4.2. Required Skills and Workforce Adaptation Strategies

- Essential Digital and Sustainability-Oriented Skills for SMEs

Portuguese footwear and leather SMEs are undergoing a dual transformation driven by digital innovation and green transition, demanding a new mix of digital and environmental skills across all levels of the workforce. To remain competitive, SMEs must integrate advanced technologies and sustainable practices into core operations, transforming job profiles and skill requirements.

Key Digital Skills Needed

- **CAD/CAM design** for digital prototyping and customization.
- **Smart factory operation** using automation, robotics, and IoT systems.
- **Data analytics** for optimizing production and minimizing waste.
- **3D printing (additive manufacturing)** for efficient, low-waste prototyping.
- **Digital workflow management** for product lifecycle control.

Key Green Skills Needed

- **Knowledge of sustainable materials** (e.g., bio-based or recycled leather).
- **Understanding circular economy principles** and low-impact manufacturing methods.
- **Life cycle assessment** and **carbon footprint calculation**.
- **Eco-certification and compliance** with EU environmental standards.
- **Energy efficiency and waste reduction** in smart production processes.

Here's a table systematizing the essential digital and green-oriented skills aligned with the specific emerging professions in Portugal's footwear and leather industry. This table highlights how each profession requires a combination of digital expertise and green knowledge tailored to its role, underscoring the comprehensive skill development needed for the Portuguese footwear and leather industry to thrive amid technological and environmental shifts:

Profession	Key Digital Skills	Key Green-Oriented Skills	Role Description & Industry Impact
Footwear CAD Designer	Expertise in CAD/CAM software, 3D modeling, virtual prototyping	Knowledge of sustainable design principles, material optimization, waste reduction	Designs customized footwear using digital tools, minimizing material waste and speeding up prototyping; blends creativity with eco-friendly approaches.
Smart Factory Technician	Operation and maintenance of automated machinery, IoT systems, robotics, data monitoring	Understanding of energy-efficient processes, waste reduction, equipment optimization	Ensures smooth functioning of smart production lines, optimizing both productivity and environmental sustainability in factories.
Sustainability Compliance Manager / Specialist	Use of data systems for environmental reporting and compliance tracking	In-depth knowledge of environmental regulations, life cycle assessment, carbon foot printing, circular economy	Leads company efforts to meet environmental standards, implement sustainable sourcing, and certify eco-friendly products.
Additive Manufacturing Specialist	3D printing technologies, digital fabrication, CAD integration	Application of low-waste manufacturing methods, use of sustainable materials	Develops prototypes and products with additive manufacturing, reducing material use and enabling sustainable production processes.
Digital Product Manager	Data analytics, digital workflow management, software tools for	Integration of sustainability metrics into product development,	Coordinates product lifecycle with a focus on innovation and sustainability, aligning

Profession	Key Digital Skills	Key Green-Oriented Skills	Role Description & Industry Impact
	project coordination	lifecycle management	digital transformation with green objectives.

- Strategies for Reskilling, Upskilling, and Career Transition

Portuguese footwear and leather industry is undergoing a profound transformation shaped by digitalization and sustainability, making it essential to implement comprehensive strategies for reskilling, upskilling, and career transition. As traditional manual processes give way to smart and eco-conscious manufacturing, the workforce must acquire new technical and environmental skills to remain competitive. Reskilling is particularly important for experienced workers whose roles are being phased out by automation, providing them with digital and green competencies such as CAD/CAM design, robotics, sustainable materials, and regulatory compliance. Upskilling builds on existing knowledge to prepare workers for emerging professions like smart factory technicians, digital product managers, and sustainability specialists, ensuring companies retain valuable expertise while adapting to change. Career transition support is equally critical, especially for roles becoming obsolete, with localized initiatives in regions like São João da Madeira and Felgueiras offering counselling, retraining, and job placement services. Partnerships with organizations such as the Portuguese Footwear Technological Centre (CTCP) enhance these efforts through access to tailored training and innovation. Government incentives, public funding, and lifelong learning policies also play a crucial role in creating an environment that supports workforce transformation. Ultimately, the sector's focus on combining traditional craftsmanship with modern, sustainable practices through coordinated skills development is key to securing its global leadership and ensuring a resilient, future-ready industry.

Need for Curricula's Reform

- VET curricula must integrate modules on:
- Digital manufacturing
- Smart textiles and materials
- Sustainable leather production
- Data analytics and IoT in production

Hybrid Profiles Required

- Combination of craftsmanship knowledge with digital and green tech skills.
- Upskilling and lifelong learning programs needed for older workers.

4.3. Educational Programs and Training Initiatives

Portugal's footwear and leather industry, recognized for its blend of craftsmanship, innovation, and export excellence, is actively embracing the green and digital transition. To ensure the sector's sustainable evolution and competitiveness, a variety of educational programs and training initiatives are being developed and implemented. These programs aim to equip current workers, new entrants, and company leaders with the necessary skills to thrive in a more technologically advanced and environmentally responsible industrial ecosystem. Below is an overview of key initiatives and programs supporting this transformation in Portugal:

These educational and training initiatives reflect Portugal's strategic focus on bridging the skills gap in one of its most emblematic export industries. Through multi-level collaboration between training providers, government bodies, industry associations, and academic institutions, the Portuguese footwear and leather sector is creating a robust learning ecosystem capable of equipping its workforce for a future defined by innovation, sustainability, and global competitiveness.

1. CTCP (Portuguese Footwear Technological Centre) Training Programs

The CTCP is at the forefront of training and innovation for the footwear and leather industry in Portugal. It offers:

- **Digital Skills Training:** courses on CAD/CAM design, automation systems, 3D printing, digital product development, and smart manufacturing tools.
- **Green Skills Modules:** programs focusing on eco-design, sustainable material sourcing, energy-efficient production, and environmental compliance.
- **Tailored Upskilling for SMEs:** customized training for company teams based on their specific technological and sustainability needs.

2. Qualifica Centres and Adult Reskilling Programs

Portuguese **Qualifica Program**, supported by the Ministry of Education, includes:

- **Recognition of prior learning** (RPL) pathways for workers to validate their experience and obtain new qualifications.
- **Lifelong learning** support for adults transitioning into green or digital roles.
- **Integration of Industry 4.0 and environmental sustainability** themes in adult education pathways relevant to the footwear sector.

3. Higher Education & Polytechnic Institutes

Institutions such as the Polytechnic Institute of Porto (IPP) and University of Minho are developing:

- Bachelor's and Master's programs in Product and Industrial Design, often with an emphasis on sustainability and digital prototyping.
- Research-based modules on bio-based materials, 3D manufacturing, and environmental innovation in footwear.
- Partnerships with CTCP and industry to promote applied research and internship programs aligned with the twin transition.

4. Industry-Academia Collaborative Projects

Several industry-led projects supported by national and EU funding focus on:

- Pilot factories and "living labs" for smart manufacturing and sustainable innovation.
- On-the-job training embedded within innovation pilots to develop digital workflows and low-impact production methods.
- Knowledge transfer activities between experienced artisans and tech-savvy younger workers to preserve know-how while adopting new practices.

Bioshoes4All https://bioshoesforall.pt/ – The Skills Development Plan within the BioShoes4All project is an integral part of its broader objective to drive sustainability, innovation, and circular economy principles within Portugal's footwear and leather goods industry. This plan is primarily implemented through the "Training and Promotion" pillar and includes three core strands: in-company training, online education, and educational outreach.

Firstly, a practical formation-action program is offered to companies in the footwear cluster, led by the Portuguese Footwear Technological Centre (CTCP). This initiative combines tailored training with hands-on coaching, focusing on the adoption of biomaterials, eco-design practices, environmental footprint assessment, recycling of production waste, elimination of harmful chemicals, and the integration of digital technologies and automation. Participating companies benefit from around 50 hours of free training and coaching, designed to accelerate their transition towards sustainable, circular, and digitally enabled business models, ultimately enhancing their competitiveness and productivity.

Secondly, the BioShoesCreators online course provides a flexible e-learning opportunity for professionals and students in the sector. This course offers foundational knowledge in sustainable and circular economy principles, business model innovation, design, digital competencies, management, and entrepreneurship. Developed by CTCP, the course is designed to foster collaboration among companies, emerging professionals, and experts, supporting a new generation of workers and leaders equipped to meet the challenges of the green and digital transition.

Lastly, the project includes a school-age outreach program, known as the "Knowledge Roadmap," spearheaded by APICCAPS. Over a three-year period, this initiative targets primary and secondary students across Portugal with the aim of promoting the footwear sector as a modern, innovative, and technologically advanced industry. Through interactive classroom visits, local events, and digital media, the campaign seeks to demystify industrial careers and encourage young people to consider future employment in the sector. To date, it has reached more than 3,000 students in over 115 schools across five municipalities.

Together, these three strands create a comprehensive skills development ecosystem that supports the footwear industry at all levels—from current professionals and businesses to future talent—ensuring that sustainability, circular economy thinking, and digital readiness become embedded across the entire value chain.

Faist - The FAIST (Fábrica Ágil, Inteligente, Sustentável e Tecnológica) https://faist.pt/ project, led by CTCP and coordinated by CARITÉ, includes a strong workforce development component designed to prepare Portugal's footwear and leather goods sector for Industry 4.0. It supports the adoption of advanced automation, robotics, digital management, and sustainable materials and processes.

FAIST's skills development efforts focus on upskilling and reskilling workers so they can effectively operate, manage, and innovate within technologically advanced production environments. As part of the project, there are targeted training programs and capacity-building actions aimed at enabling staff to control increasingly automated systems, use software tools, monitor and maintain robotized production lines, and engage with intelligent processes that enhance efficiency and ergonomics. A key objective is to reduce repetitive tasks and exposure to harmful materials, thereby improving working conditions while elevating the skill level of the workforce.

FAIST is expected to create around 300 new jobs by mid-2025, including approximately 100 highly specialized positions

These roles will require advanced technical competencies in areas like automated manufacturing, industrial digitalization, robotics, software-based production control, and sustainability, reflecting a deliberate push to raise the industry's technical human capital

To demonstrate these advancements, FAIST has implemented pilot units and demonstration events showcasing fully integrated production lines, autonomous digitalization processes, and robotics-enabled finishing and inspection stations

These activities not only validate the technologies but also serve as training environments where employees can learn by doing. This hands-on exposure reinforces the theoretical training and accelerates the workforce's transition toward high-value tasks.

In summary, FAIST's skills development plan seeks to equip the footwear sector's workforce with the knowledge, practical experience, and advanced competencies required to drive a modern, digital, sustainable industrial model. Through a combination of structured learning, upskilling activities, real-world pilot implementations, and significant job creation, FAIST transforms the industry's human resources into a strategic asset aligned with next-generation manufacturing goals.

Modular Training – anchored in the National Catalogue for Qualifications, this program offers training within certification standards that allow the participation to collect credits to design a complete qualification at their own pace. With the modernization of the Catalogue, where CTCP and other partners had a strong intervention, this Modular Trainings will offer updated training on digitalisation and circularity

Online platforms and MOOCs that include content on automation, data literacy, and digital transformation relevant to footwear and leather professionals.

5- European projects leaded by Portugal

Portugal has been actively leading and participating in several European projects aimed at enhancing digital and green skills within the footwear and leather industry. These initiatives are instrumental in driving the sector's transformation towards sustainability and technological advancement. Below is a list of notable projects.

These projects reflect Portugal's commitment to fostering a skilled workforce capable of navigating the challenges and opportunities presented by the digital and green transitions in the footwear and leather industry. Through collaborative efforts and strategic initiatives, Portugal is positioning itself as a leader in sustainable and technologically advanced manufacturing.

European Projects Led or Co-Led by Portugal on Digital and Green Skills in the Footwear and Leather Industry

MetaSkills4TCLF (Erasmus+ Blueprint) https://metaskills4tclf.eu/

Objective: Develop a comprehensive skills strategy for the Textile, Clothing, Leather, and Footwear (TCLF) sectors, focusing on digital and green competencies.

Portuguese Involvement: The project was introduced during a kick-off meeting held in Portugal, highlighting the country's leadership role.

Shoe 5.0 – Partnership for Footwear Industry 5.0 Readiness https://shoe50.eu/

Objective: Equip the footwear workforce with skills pertinent to Industry 5.0, emphasizing digitalization and sustainability.

Portuguese Participation: Portugal is among the primary countries targeted, with CTCP actively involved in the project.

Learning Factories https://learning-factories.eu/

Objective: Implement innovative training methodologies in the leather goods industry, focusing on digital and green skills.

Portuguese Leadership: The project is led by the Portuguese SME Belcinto, in collaboration with CTCP and other European partners.

These projects reflect Portugal's commitment to fostering a skilled workforce capable of navigating the challenges and opportunities presented by the digital and green transitions in the footwear and leather industry. Through collaborative efforts and strategic initiatives, Portugal is positioning itself as a leader in sustainable and technologically advanced manufacturing.